

Translation

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PATENT COOPERATION TREATY

PCT/EP2003/012228



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

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9 MAR 2006

(PCT Article 36 and Rule 70)

|  |   |   |
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| Applicant's or agent's file reference<br>43397   | <b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |   |
| International application No.<br>PCT/EP2003/012228   | International filing date (day/month/year)<br>03 November 2003 (03.11.2003)   | Priority date (day/month/year)<br>01 November 2002 (01.11.2002) |
| International Patent Classification (IPC) or national classification and IPC<br>G01B 11/00 |   |   |
| Applicant<br>WERTH MESSTECHNIK GMBH  |   |   |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.  
☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 7 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

|  |   |
|--|---|
| Date of submission of the demand<br>28 May 2004 (28.05.2004) | Date of completion of this report<br>28 January 2005 (28.01.2005) |
| Name and mailing address of the IPEA/EP                      | Authorized officer  |
| Facsimile No.  | Telephone No.   |

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP2003/012228

## I. Basis of the report

### 1. With regard to the elements of the international application:\*

- ☐ the international application as originally filed
- ☒ the description:  
 pages 3, 4, 7, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages 2/1, 5, 6, filed with the letter of 18 August 2004/13 December 2004
- ☒ the claims:  
 pages 9-16, as originally filed  
 pages \_\_\_\_\_, as amended (together with any statement under Article 19  
 pages \_\_\_\_\_, filed with the demand  
 pages 1-8, filed with the letter of 123 December 2004 (123.12.2004)
- ☒ the drawings:  
 pages 2/3, 3/3, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages 1/3, filed with the letter of 13 December 2004 (13.12.2004)
- ☐ the sequence listing part of the description:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

### 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

- These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:
- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

### 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

### 4. ☐ The amendments have resulted in the cancellation of:

- ☒ the description, pages 1, 2, 5, 6
- ☒ the claims, Nos. 1-8
- ☒ the drawings, sheets/fig 1/3

### 5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
PCT/EP 03/12228

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

|                               |        |      |     |
|-------------------------------|--------|------|-----|
| Novelty (N)                   | Claims | 1-16 | YES |
|                               | Claims |      | NO  |
| Inventive step (IS)           | Claims | 1-16 | YES |
|                               | Claims |      | NO  |
| Industrial applicability (IA) | Claims | 1-16 | YES |
|                               | Claims |      | NO  |

### 2. Citations and explanations

#### 1. Reference is made to the following document:

D1: DE-A-100 56 073 (cited in the description, page 2).

Document D1 is considered the prior art closest to the subject matter of claim 1.

1.1 Claim 1 contains the feature whereby the illuminating beam path at the object end runs parallel to the first beam path coming from the measuring lens. The word "parallel" results in a lack of clarity and leaves the reader uncertain as to the meaning of the technical feature in question. As a result, the subject matter of claim 1 is not clearly defined (PCT Article 6). In order for the arrangement as per claim 1 to be able to work, the aforementioned beam paths at the object end must be not only parallel but also coincident. Claim 5 does not define a "second beam path". For the purpose of this international preliminary examination report, it was assumed that the stated unclear points have been rectified by the applicant.

2.1 D1 discloses (the references between parentheses refer to that document): an arrangement for measuring the geometry or structure of an object (drawing, 5) by means of a co-ordinates measuring device (drawing, 1-4, 6-8) comprising a light source (drawing, 1), from which is emitted an illuminating beam path that hits a measuring point on the object, and an optical system for detecting and mapping the measuring point onto at least one optical sensor (drawing, 8), such as a CCD sensor, the optical system containing (column 4, lines 61 to 64) at least one movable lens group comprising measuring lenses (drawing), at least some of the measuring lenses each being accommodated in a housing (not shown in the drawing), and at least one additional lens (drawing) penetrated by the illuminating beam being disposed in at least some of the housings for accommodating the measuring lenses (drawing) of the least one movable lens group.

2.2 The subject matter of claim 1 differs from the device known from D1 in that:

- the first beam path coming from the measuring lens at the object end runs parallel to the illuminating beam path from the at least one additional lens.

The subject matter of claim 1 is therefore novel (PCT Article 33(2)) over the device disclosed in D1.

2.3 The present invention can be considered to address the problem of optimising the device known from D1 so as to improve the signal-to-noise ratio. This problem is solved by the applicant in that the first beam path coming from the measuring lens at the

object end runs parallel to the illuminating beam path from the at least one additional lens. These measures result in the advantageous use of an objective lens (application, figure 1, 43; figure 2, 58, the measuring lens 58 being used as objective lens) with a diameter that is considerably smaller than the lateral dimension of the housing in which the optical and mechanical components of the arrangement are mounted (see D1, drawing, objective 4, housing 3). The amount of scattered light caused by reflections on the uneven surface of the object to be measured (false light, page 2 of description) and which is detected by the receiver is dependent on the aperture of the solid angle that is defined by the measuring point and the objective lens: the greater the aperture, the more scattered light is detected by the receiver. In comparison with D1 and for the same distance between the measuring point and the objective lens, the invention uses a considerably smaller solid angle for collecting the light reflected by the measuring point, which considerably improves the signal-to-noise ratio compared with D1.

- 2.4 The solution to this problem as proposed in claim 1 of the present application involves an inventive step (PCT Article 33(3)). Neither D1 nor any other prior art document points a person skilled in the art in the direction of the invention: although separate illuminating and measuring beam paths are known, there is nothing that would prompt a person skilled in the art to alter the known devices in line with the invention.

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- 3      Claims 2 to 16 are dependent on claim 1 and therefore meet the PCT requirements for novelty and inventive step.